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permit of a general treatment of blending inheritance. If one attempts to apply to each case a scheme of specially weighted factors, as Punnett has done for size inheritance in fowls and rabbits, he proves nothing except the fact that a factorial explanation of his results is possible, for by properly weighting factors and assuming that some inhibit the action of others, one can fit to his observations a scheme involving either few or many factors. If one factor really has an influence greatly superior to that of other factors in a case of blending inheritance, this will be seen in the production of asymmetrical or multimodal variation polygons in  $F_1$  and  $F_2$ . If, when adequate numbers are produced, the variation curves of  $F_1$  and  $F_2$  are both smooth, it is certain that no genetic factor of predominant influence is involved in the case, but that several or many factors substantially equal in influence are concerned. Whether many or few can perhaps be ascertained by the method suggested in this paper.

I have recently applied it in the study of weight inheritance in crosses between races of rabbits differing in size, with the following results. Three races of rabbits were crossed in all possible ways. The average size of the smallest race, Polish, was 1,404 grams; of the second race, Himalayan, it was 1,875 grams; of the third race, Flemish, it was 3,600 grams. The number of factors indicated as differentiating the races in weight is in the order of magnitude of the differences between the races. See Table III. But the number of factors indicated as differentiating the smallest race from the largest (Polish from Flemish) is apparently too great, since it exceeds the sum of the differences in number of factors indicated as existing in the other two crosses. It is perhaps not to be expected that results more than approximately correct would be given by this method, unless fairly large numbers of both  $F_1$  and  $F_2$  individuals have been studied. In the rabbit crosses, the numbers of  $F_1$  individuals studied were 16, 25, and 27, respectively. The  $F_2$  numbers were 50, 62, and 112. The results obtained are sufficient to indicate the probability that in the Polish

× Himalayan cross, 50 or more factors are involved, and that the crosses with the largest race, Flemish, involve two or three times as many factorial differences. A fuller discussion of this case will be published later.

W. E. CASTLE

BUSSEY INSTITUTION,  
May 27, 1921

## THE UTAH ACADEMY OF SCIENCES

THE fourteenth annual convention of the Utah Academy of Sciences met in the physics lecture room of the University of Utah, Salt Lake City, on Friday evening, April 1, 1921, and continued for three sessions, closing Saturday afternoon with a business session at which the following officers were elected for the ensuing year.

*President*, Dr. Frank L. West, Utah Agricultural College, Logan, Utah.

*First Vice-president*, Professor Hyrum Schneider, University of Utah, Salt Lake City.

*Second Vice-president*, Professor Carl F. Eyring, Brigham Young University, Provo.

*Secretary*, A. O. Garrett, East High School, Salt Lake City.

*Corresponding Secretary*, C. Arthur Smith, East High School, Salt Lake City.

*Councillors*, Professor Harold R. Hage, University of Utah; Dr. M. C. Merrill, Utah Agricultural College, Logan; R. A. Hart, U. S. Reclamation Service, Salt Lake City.

Twenty-seven new members were added to the academy's roll of membership, making the largest increase in any one year in the history of the academy.

The academy voted unanimously to support the following resolutions:

WHEREAS: There is a greatly increased appreciation and use of the recreation and scenic resources of Utah to which an abundant supply of wild life is of great importance in furnishing an opportunity for nature study, fishing and hunting;

WHEREAS: The maintenance of proper forest conditions is necessary for the preservation and production of fish and game;

WHEREAS: Proper measures to insure a continued supply of fish and game must be based on a scientific knowledge of biological factors involved;

Therefore, be it resolved, That the Utah Academy of Sciences:

1. Emphasize the close relationship between our forests and fish and game conservation.

2. Endorse the recognition by the Forest Service that the fish, game and wild life on the National Forests are valuable resources to be preserved and maintained.

3. Cooperate with the sportsmen, the State Game Department, and Federal departments in order that proper measures to perpetuate the fish and

game be undertaken and that the general public, especially the youths, be informed regarding our wild life and the necessity for its protection.

**WHEREAS:** The rapid increase in population of the United States and Canada with its consequent use of agricultural and forest land is threatening the extinction of many native species of plants and animals, and

**WHEREAS:** The preservation of such native species is greatly to be desired, be it

*Resolved:* That the Utah Academy of Sciences endorse the work of the Ecological Society of America in the movement for the preservation of natural conditions in the United States and Canada.

*Resolved:* That it is particularly important that areas with typical plant and animal communities in different states of the union and the provinces of Canada be preserved and allowed to go on with their natural successional changes for the benefit not only of students who are interested in these subjects at the present time, but also and more particularly for future generations.

*Resolved:* That this Academy hereby requests the National Research Council to take cognizance of this important subject and requests said National Research Council to aid in whatever manner may be possible the work of the Ecological Society of America in securing vegetation and animal preserves and sanctuaries for the furtherance of scientific study.

*Resolved:* That a copy of these resolutions be forwarded by the corresponding secretary to Dr. C. E. McClung, chairman of the Division of Biology and Agriculture of the National Research Council.

**WHEREAS:** It is recognized that the timber supply of the nation is rapidly becoming depleted;

**WHEREAS:** The forest resources are of the greatest importance in the economic and industrial development of Utah and of the entire nation;

**WHEREAS:** The maintenance of proper forest conditions on important watersheds is conducive to a regular and continued stream flow and an adequate supply of pure water so essential for domestic, hydro-electric and irrigation use;

*Be it resolved:* That the Utah Academy of Sciences strongly endorses the conservation of forests to the extent of maintaining all potential forest land in a highly productive condition. With this purpose in view, we therefore, strongly urge the adoption of a national forest policy for the entire nation similar to that proposed in H. R. 15,327, introduced in the 3d Session of the 66th Congress, commonly known as the "Snell Bill."

*Therefore, be it further resolved:* That the Corresponding Secretary be instructed to transmit copies of this resolution to the members of Congress from Utah.

The following papers were read at the three sessions of the convention.

#### FRIDAY EVENING, APRIL 1

#### *Symposium of Forests Conservation in Utah*

*Making the forest of Utah a permanent resource*, C. F. CORSTIAN, U. S. Forest Service, Ogden, President of the Academy.

*Fungus forest tree diseases of Utah*, A. O. GARRETT, East High School, Salt Lake City.

*Forest and fish and game conservation*, S. B. LOCKE, U. S. Forest Service, Ogden.

*Forests in relation to climate and water supply of Utah*, J. CECIL ALTER, U. S. Weather Bureau, Salt Lake City.

#### SATURDAY A.M.

*Analytical distillation of shale oil*, M. J. GAVIN, U. S. Bureau of Mines, Salt Lake City.

*The use of the microscope in ore dressing*, R. E. HEAD, U. S. Bureau of Mines.

*Destructive distillation of oil shale*, L. C. KARRICK, U. S. Bureau of Mines.

*Chemistry of the volatilization process*, THOMAS VARLEY and C. M. BOUTON, U. S. Bureau of Mines.

*Metallurgy of the volatilization process*, C. C. STEVENS, University of Utah.

*Function of steam in retorting oil shales*, M. J. GAVIN, U. S. Bureau of Mines, and J. J. JAKOWSKY, University of Utah.

*Reduction of copper from chloride fumes*, R. H. BRADFORD, University of Utah.

#### SATURDAY P.M.

*Decomposition of green manure at different stages of growth*, THOMAS L. MARTIN, Millard Academy.

*The normal temperature as a function of the time, elevation above sea level and the latitude*, FRANK L. WEST, Utah Agricultural College.

*Vitamines in relation to nutrition*, W. E. CARROLL, Utah Agricultural College, Logan.

*Relation of precipitation to height growth of forest tree saplings*, CLARENCE F. KORSTIAN, U. S. Forest Service.

A twelve o'clock luncheon was given to the members of the academy and their friends at the university dining hall under the efficient direction of Miss Lucy Van Cott, dean of women, University of Utah. Dr. Frank L. Harris, of the Agricultural College, spoke at the luncheon on the general topic of scientific research, emphasizing the importance of stimulating an appreciation of its results in the public mind.

C. ARTHUR SMITH,  
Corresponding Secretary